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tetraethylorthosilicate and a fluorine-containing halocarbon gas selected from the group consisting of **[CX_4]** CY_4 and CX_3-$(CX_2)_n$-CX_3 wherein X is hydrogen or halogen and n is an integer from 0 to 5 with the proviso that at least one X is fluorine and wherein Y is hydrogen or halogen and at least one Y is hydrogen and at least one Y is fluorine; and

subjecting the substrate to the plasma so as to deposit a layer of silicon oxide containing at least about 2.5 atomic percent of fluorine onto the substrate without the formation of voids in the film.

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2. The method of claim 1 wherein the plasma is created from the tetraethylorthosilicate and C_2F_6.

3. The method of claim 1 wherein the plasma is created by means of two power sources having different frequencies.

4. The method of claim 3 wherein the plasma is created by means of one power source having a frequency of about 13.56 MHz and a second power source having a frequency of between 50 KHz and 1000 KHz.

5. The method of claim 4 wherein the second power source has a frequency of about 400 KHz.

6. The method of claim 1 wherein a single power source having a frequency of about 13.56 MHz is used.

7. The method of claim 1 wherein said power source is a source of microwave power.

8. (Amended) A method of forming a conformal thin film of silicon oxide over a substrate having spaced conductive lines thereon in a plasma chamber comprising

mounting a substrate in said chamber;

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introducing into the chamber in a region above said substrate as a plasma precursor gas vaporized tetraethylorthosilicate in a carrier gas including oxygen and a fluorocarbon selected from the group consisting of

[CX_4] CY_4 and CX_3-$(CX_2)_n$-CX_3

wherein X is hydrogen or fluorine and n is an integer from 0 to 5 with the proviso that at least one X is fluorine and wherein Y is hydrogen or halogen and at least one Y is hydrogen and at least one Y is fluorine;

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and thereafter forming a plasma therefrom, so as to deposit a layer of silicon oxide containing at least about 2.5 atomic percent of fluorine over said conductive lines.

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9. A method according to claim 8 wherein the plasma precursor gas contains a ratio of silicon:fluorine of about 14:1.

10. A method according to claim 8 wherein the conductive lines are less than 1 micron in width and no more than 1 micron apart.

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27. (New) A method of forming a layer of silicon oxide over a substrate having spaced conductive lines thereon in a process chamber, the method comprising:

introducing a selected process gas comprising silicon and oxygen into the process chamber;

adding a flow of a halogen source to the selected process gas at a flow rate previously determined to achieve a desired stress in the layer from a plasma enhanced reaction of the selected process gas and the flow of the halogen source at the flow rate, the desired stress in the layer being a tensile stress instead of a compressive stress in a layer formed from a plasma enhanced reaction of the selected process gas without the flow of the halogen source; and

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forming a layer from a plasma enhanced reaction of the selected process gas and the flow of the halogen source at the flow rate.

28. (New) The method of claim 27 wherein the halogen source comprises a fluorine source.

29. (New) The method of claim 28 wherein the fluorine source is selected from the group consisting of CF_4 and C_2F_6.

30. (New) The method of claim 27 wherein the silicon source comprises tetraethylorthosilicate.

31. (New) The method of claim 27 wherein the desired tensile stress is less than about $0.4X10^9$ dynes/cm^2 in magnitude.

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32. (New) The method of claim 31 wherein the silicon source comprises tetraethylorthosilicate and the fluorine source comprises C_2F_6.